

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-5 (canceled).

6. (previously presented): A method of selecting an IP address for an added device that does not overlap with other addresses among an effective address range permitted as IP addresses, the method comprises the steps of:

detecting and collecting addresses of all other devices connected with the added device to a network by receiving and analyzing signals flowing through the network;

sectioning binary numerals of the collected IP address at Nth bit ($1 \leq N \leq K$, K is a predetermined natural number) from a minimum digit, and defining digits not less than the Nth bit as high rank bits and digits lower than Nth bit as low rank bits;

judging whether all of the high rank bits of the collected IP addresses are the same;

if all of the high rank bits are not the same, changing N to N+1, N-1, or to a desired number, and sectioning the binary numerals in the step of sectioning to make the judgment at the judgment step;

repeating the number changing step until all of the high rank bits become the same;

if all of the high rank bits are the same, adopting a value expressed by a binary number composed of the same high rank bits and low rank bits set all to 0 as an IP network address, and adopting a value expressed by a binary number composed of high rank bits set all to 1 and low rank bits set all to 0 as subnet mask; and

selecting an IP address, which is different from the IP address of any other device connected to the network, from among a group of effective IP addresses defined by the IP network address and the subnet mask.

7. - 8 (canceled).

9. (previously presented): A method for automatically deciding a value of an Internet address that is not overlapped in an environment where a plurality of similar IP address deciding devices, each having its own MAC address, are used, the method comprising at an IP address deciding device the steps of:

selecting an IP address that is intended for use and its own MAC address;

sending an address resolution request packet using the selected IP address as that of a transmitter and as a requested address;

observing for a predetermined period of time whether or not an address resolution request packet, including an identical IP address used as that of a transmitter and as a requested address and a MAC address different from its own MAC address, is sent;

when the address resolution request packet is not observed, then setting the IP address as its own IP address to finish the operation, and when the address resolution request packet is observed, then judging whether the MAC address included in the packet is smaller than its own MAC address; and

when the MAC address is smaller than its own MAC address, then setting the IP address as its own IP address to finish the operation, and when the MAC address is not smaller than its own MAC address, then selecting another IP address that is to be used.

10. 11. (canceled).

12. (previously presented): A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform a method of selecting an IP address for an added device that does not overlap with other addresses among an effective address range permitted as IP addresses, the method comprises the steps of:

detecting and collecting addresses of all other devices connected with the added device to a network by receiving and analyzing signals flowing through the network;

sectioning binary numerals of the collected IP address at Nth bit ($1 \leq N \leq K$, K is a predetermined natural number) from a minimum digit, and defining digits not less than the Nth bit as high rank bits and digits lower than Nth bit as low rank bits;

judging whether all of the high rank bits of the collected IP addresses are the same;

if all of the high rank bits are not same, changing N to N+1, N-1, or to a desired number, and sectioning the binary numerals in the step of sectioning to make the judgment at the judgment step;

repeating the number changing step until all of the high rank bits become the same;

if all of the high rank bits are the same, adopting a value expressed by a binary number composed of the same high rank bits and low rank bits set all to 0 as an IP network address, and adopting a value expressed by a binary number composed of high rank bits set all to 1 and low rank bits set all to 0 as subnet mask; and

selecting an IP address, which is different from the IP address of any other device connected to the network, from among a group of effective IP addresses defined by the IP network address and the subnet mask.

13. 14. (canceled).

15. (currently amended): A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform a method for automatically deciding a value of an Internet address that is not overlapped in an environment where a plurality of similar IP address deciding devices, each having its own MAC address, are used, the method comprising at an IP address deciding device the steps of:

selecting an IP address that is intended for use ~~and~~ as its own MAC address;

sending an address resolution request packet using the selected IP address as that of a transmitter and as a requested address;

observing for a predetermined period of time whether or not an address resolution request packet, including an identical IP address used as that of a transmitter and as a requested address and a MAC address different from its own MAC address, is sent;

when the address resolution request packet is not observed, then setting the IP address as its own IP address to finish the operation, and when the address resolution request packet is observed, then judging whether the MAC address included in the packet is smaller than its own MAC address; and

when the MAC address is smaller than its own MAC address, then setting the IP address as its own IP address to finish the operation, and when the MAC address is not smaller than its own MAC address, then selecting another IP address that is to be used.

16. 19. (canceled).

20. (previously presented): A computer-based apparatus operative to select an IP address for an added device that does not overlap with other addresses among an effective address range permitted as IP addresses, the apparatus comprising:

a collecting unit for detecting and collecting addresses of all other devices connected with the added device to a network by receiving and analyzing signals flowing through the network;

a sectioning unit for sectioning binary numerals of the collected IP address at Nth bit ($1 \leq N \leq K$, K is a predetermined natural number) from a minimum digit, and defining digits not less than the Nth bit as high rank bits and digits lower than Nth bit as low rank bits;

a judging unit for judging whether all of the high rank bits of the collected IP addresses are the same;

if all of the high rank bits are not the same, a changing unit for changing N to N+1, N-1, or to a desired number, and sectioning the binary numerals in the step of sectioning to make the judgment at the judgment step;

a repeating unit for repeating the number changing step until all of the high rank bits become the same;

if all of the high rank bits are the same, an adopting unit for adopting a value expressed by a binary number composed of the same high rank bits and low rank bits set all to 0 as an IP network address, and adopting a value expressed by a binary number composed of high rank bits set all to 1 and low rank bits set all to 0 as subnet mask; and

a selecting unit for selecting an IP address, which is different from the IP address of any other device connected to the network, from among a group of effective IP addresses defined by the IP network address and the subnet mask.

21. 22. (canceled).

23. (previously presented): A computer-based apparatus operative to automatically decide a value of an Internet address that is not overlapped in an environment where a plurality of similar IP address deciding devices, each having its own MAC address, are used, the apparatus comprising at an IP address deciding device:

a selecting unit for selecting an IP address that is intended for use and its own MAC address;

a sending unit for sending an address resolution request packet using the selected IP address as that of a transmitter and as a requested address;

an observing unit for observing for a predetermined period of time whether or not an address resolution request packet, including an identical IP address used as that of a transmitter and as a requested address and a MAC address different from its own MAC address, is sent;

when the address resolution request packet is not observed, then a setting unit for setting the IP address as its own IP address to finish the operation, and when the address resolution request packet is observed, then a judging unit for judging whether the MAC address included in the packet is smaller than its own MAC address; and

when the MAC address is smaller than its own MAC address, then the setting unit for setting the IP address as its own IP address to finish the operation, and when the MAC address is not smaller than its own MAC address, then second selecting unit for selecting another IP address that is to be used.